

Claims

What is claimed is:

1. A method of emulating a device by a node on a serial bus comprising the steps of:
creating a virtual device object for the device;
responsive to the step of creating the virtual device object, loading an emulation
driver for the device; and
5 dynamically exposing, on the serial bus, an emulated device functionality.
2. The method of claim 1 further comprising a step of: enumerating, by the node, at least
one other node on the serial bus.
3. The method of claim 2 further comprising the steps of:
creating, by the at least one other node, a physical device object for the device; and
loading a device driver for the device.
4. The method of claim 1 wherein the step of creating the virtual device object is done
by a bus driver.
5. The method of claim 4 wherein the bus driver is an IEEE 1394 compliant bus driver.
6. The method of claim 1 wherein the device is capable of being plugged natively into
the serial bus.
7. The method of claim 1 wherein the serial bus is an IEEE 1394 compliant serial bus.
8. The method of claim 1 wherein the virtual device object can exist independent of bus
events.
9. The method of claim 8 wherein the bus events include at least one of: addition of the
device and removal of the device.
10. The method of claim 1 wherein the node is a personal computer running a general
purpose operating system.
11. The method of claim 1 wherein the step of exposing the emulated device functionality
is done by configuration memory.
12. A method for creating a virtual device object comprising:
creating a data structure which comprises a request for creating a virtual device
object; and
5 sending the data structure to a bus driver which, responsive to the request, creates the
virtual device object.

13. The method of claim 12 wherein the data structure comprises:

a request field; and

a flag field.

14. The method of claim 12 wherein the bus driver is an IEEE 1394 compliant bus driver.

~~15.~~ A method for removing a virtual device comprising:

creating a data structure which comprises a request for removing a virtual device object; and

5 sending the data structure to a bus driver which, responsive to the request, removes the virtual device object.

16. The method of claim 15 wherein the bus driver is an IEEE 1394 compliant bus driver.

~~17.~~ A method for implementing an emulation driver comprising:

modifying a configuration memory;

issuing a bus reset; and

allocating node address space to intercept requests to an emulated device register.

18. The method of claim 17 wherein modifying a configuration memory further comprises:

submitting a request to modify by a virtual device object;

adding a unit directory to the configuration memory; and

5 altering information necessary to expose an emulated device functionality.

~~19.~~ A system for emulating a device, comprising in combination:

a serial bus; and

a node connected to the serial bus which will emulate at least one device.

20. The system of claim 19 wherein the serial bus is an IEEE-1394 compliant serial bus.

21. The system of claim 19 wherein the node further comprises:

a configuration memory compliant with IEEE-1212 standard in which device functionality will be stored; and

a layered protocol stack.

22. The system of claim 21 wherein the layered protocol stack furthers comprises:

a bus driver for controlling bus communications;

at least one device object in communication with the bus driver for representing the at least one device; and

at least one device driver in communication with the at least one device object for interfacing with the at least one device.

23. The system of claim 22 wherein the bus driver is an IEEE-1394 compliant bus driver.

24. The system of claim 22 wherein the device object is a virtual device object.

25. The system of claim 22 wherein the device driver is a virtual device driver.

26. The system of claim 19 which further comprises a physical device coupled to the node.

27. A device for emulating at least one other device comprising:

a configuration memory compliant with IEEE-1212 standard; and

a layered protocol stack in communication with the configuration memory.

28. The device of claim 27 wherein the layered protocol stack further comprises:

a bus driver;

at least one device object in communication with the bus driver for representing the at least one other device; and

5 at least one device driver in communication with the at least one device object for interfacing with the at least one other device.

29. The device of claim 27 wherein the bus driver is an IEEE-1394 compliant bus driver.

30. The device of claim 27 wherein the device object is a virtual device object.

31. The device of claim 27 wherein the device driver is a virtual device driver.

32. The device of claim 27 wherein the configuration memory has at least one unit directory.

33. A computer-readable medium comprising instructions that, when executed by a computer on which a device will be emulated, perform the steps of:

creating a virtual device object;

loading an emulation driver; and

5 dynamically exposing, on a serial bus, a device functionality.

34. The computer-readable medium of claim 33 wherein the computer instructions when executed further perform the step of causing enumeration, by the computer, of at least one other node on the serial bus.

35. The computer-readable medium of claim 34 wherein the enumeration is caused by a bus reset.

